

Lifecycle Report for

**Social Housing Bundle 4, Development at
Stanley Street, Dublin**

for Dublin City Council

Report No. SHB4-SSD-RP-SHA-AR-P3-6200-LCR

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1. Introduction

1.1 REQUIREMENTS OF THE APARTMENT GUIDELINES

The Sustainable Urban Housing; Design Standards for New Apartments – Guidelines for Planning Authorities were published in March 2018 (hereafter referred to as the Apartment Guidelines). The Apartment Guidelines introduced a requirement to include details on the management and maintenance of apartment schemes.

Section 6.13 of the Apartment Guidelines 2018 requires that apartment applications:

“... include a building lifecycle report, which in turn includes an assessment of long-term running and maintenance costs as they would apply on a per residential unit basis at the time of application as well as demonstrating what measures have been specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents.”

This Building Life Cycle Report document sets out to address the requirements of Section 6.13 of the Apartment Guidelines

1.2 PROPOSED DEVELOPMENT

This report was prepared by Seán Harrington Architects on behalf of the National Development Finance Agency (NDFA) and Dublin City Council, to accompany a Part 8 proposal for development described as follows in the public notices.

Notice is hereby given of the construction of 167 apartments and duplex units at a site c. 1.15 ha at the former Dublin City Fire Brigade Maintenance Depot and Dublin City Council Mechanical Division, Stanley Street, Grangegorman Lower, Dublin 7. Development at the site will consist of the following:

- The demolition and site clearance of the existing buildings, sheds, warehouses and garages.
- Retention and modification of the south and east elevation of an existing structure (facing onto Grangegorman Lower) to form part of apartment Block G at the southeast corner of the site.
- Construction of 167 no. apartment and duplex units across Blocks A-K (including frontage onto Grangegorman Lower).
- Blocks A – C consist of 71 no. apartment units (43 no. 1 bed and 28 no. 2 bed units) and ranges from 5 to 6 storeys.
- Blocks D-G consist of 84 no. apartment units (43 no. 1 bed units, 29 no. 2 bed units and 12 no. 3 bed units) and ranges from 4 to 5 storeys.
- Blocks H-K consist of 12 no. duplex units (6 no. 1 bed and 6 no. 3 bed units) and are 3 storeys.

- Provision of 270 long-stay and 101 short-stay bicycle parking spaces, 19 no. car parking spaces and 1 no. motorcycle parking space.
- Construction of a 277.54 sqm creche.
- Provision of 552 sqm of community, cultural and arts space located at ground floor level across Blocks B, E, F and G.
- 0.113 ha of public open space and 1350 sqm of communal open space
- Vehicular access is proposed from Grangeegorman Lower and vehicular egress is proposed onto Stanley Street.
- Boundary treatments, public lighting, site drainage works, internal road surfacing and footpaths, ESB meter rooms, ESB substations, stores, bin and cycle storage, plant rooms, landscaping; and
- All ancillary site services and development works above and below ground.

2. Long Term Running and Maintenance Costs

2.1 PROCUREMENT METHOD

It is intended that the development will be delivered through a Public Private Partnership (PPP) structure which will include maintenance and tenancy management services. Under this arrangement, the appointed PPP Company in partnership with an Approved Housing Body, will be responsible for the maintenance and management of the development and the life cycling of building elements on behalf of Dublin City Council and the residents over a 25-year period. Thereafter the maintenance and management of the development will be handed over to Dublin City Council.

As part of the appointment of the PPP Company, a performance specification will be developed that will outline the level of robustness and life expectancy of materials to be used, the required maintenance regimes and the residual life of building elements at the end of the 25-year period. The performance specification will cover external envelope materials, internal and external communal areas and all areas within the public realm including approaches to providing lighting, heating, hot water provision and other services.

At this planning stage, consideration has been given to the external materials to buildings, boundaries, and the public realm, and also outline energy carbon reduction strategies. The materials and services proposed will be durable and will provide a long life and low maintenance requirements for the residents.

2.2 PROPERTY MANAGEMENT OF THE APARTMENT UNITS AND COMMON AREAS

The units are not planned for individual resale. The MUDS Act and in particular the requirement to establish an Owners Management Company (OMC) shall not apply to these units unless at some stage in the future it is decided to offer the units for individual sale. In that event an OMC would be required but at this stage that is not envisaged.

2.3 MAINTENANCE COSTS/LIFECYCLE COSTS

As part of the appointment of the PPP Company, a performance specification will be developed that will outline the level of robustness and life expectancy of materials to be used, the required maintenance regimes and the residual life of building elements at the end of the 25-year period. The performance specification will cover external envelope materials, internal and external communal areas and all areas within the public realm including approaches to providing lighting, heating, hot water provision and other services.

The detail associated with each element heading i.e., specification and estimate of the costs to maintain / repair or replace, can only be determined after detailed design and the procurement/ construction of the development and therefore has not been included in this document.

At this planning stage, consideration has been given to the external materials to buildings, boundaries, and the public realm, and outline energy and carbon reduction strategies. The materials and services proposed will be durable and will provide a long life and low maintenance requirements for the residents.

3. Measures considered to effectively manage and reduce costs for the benefit of residents

3.1 ENERGY AND CARBON EMISSIONS

The following are an illustration of the energy measures that have been designed for and which the PPP Company will be able to consider for the units to assist in reducing costs for the occupants.

Measure	Description	Benefit
BER Certificates	<p>A Building Energy Rating (BER) certificate will be provided for each dwelling in the proposed development which will provide detail of the energy performance of the dwellings. A BER is calculated through energy use for space and hot water heating, ventilation, and lighting and occupancy. It is proposed to target an A2 rating for the apartments as a minimum, and this will equate to the following emissions.</p> <p>A2–25-50 kwh/m2/yr with CO2 emissions c.10kgCO2/m2 /year</p>	Higher BER ratings reduce energy consumption and running costs.
Fabric Energy Efficiency	<p>The U-values being investigated will improve upon the requirements set out by the current regulatory requirements of the Technical Guidance Documents Part L, titled “Conservation of Fuel and Energy Buildings other than Dwellings”.</p> <p>The overall envelope value will be based on the figures contained in the Sustainability and Climate Action Report included in this application.</p>	Lower U-values and improved air tightness is being considered to help minimise heat losses through the building fabric, lower of energy consumption and thus minimise carbon emissions to the environment.
Lighting Efficiency	<p>Low energy luminaires and automatic controls such as motion sensors are to be provided for electric lighting to maximize efficiency in use. LED lamps will be preferred as far as is practical. Lighting will be provided to ensure a safe environment for pedestrians, cyclists and moving vehicles, to deter anti-social behaviour and to limit the environmental</p>	Low energy lamps and automatic controls improve energy efficiency. Adequate lighting levels ensure safe environments.

	impact of artificial lighting on existing flora and fauna in the area.	
Energy Labelled White Goods	The white good package (where provided) in the dwellings will be of a very high standard and have a high energy efficiency rating.	The provision of high rated appliances in turn reduces the amount of electricity required for occupants.

The following are Low energy technologies that are being considered for the development and during the design stage of the development the specific combination from the list below will be decided on and then implemented to achieve the A2 BER Rating.

Measure	Description	Benefit
Heat pumps	Air source Heat pump or internal exhaust air heat pump units have been designed for and are to be considered to provide heating and hot water demands.	Heat pumps operate with efficiencies >400%. Air to water heat pumps utilise external cold air as the air source for the heat pump. Through compression, heat pumps can 'pump up' heat at low temperature and release it at a higher temperature so that it may be used again.
Mechanical Ventilation Heat Recovery or Demand-controlled ventilation	<p>With air tightness of housing improving to reduce heat loss and energy and healthy environment is needed to be considered to ensure fresh air is provided and that condensation is not an issue.</p> <p>Mechanical Ventilation Heat Recovery or Demand-controlled ventilation will be considered to provide ventilation with low energy usage.</p>	<p>MVHR provides continuous ventilation to habitable rooms with low energy usage. Continuous extract is also provided from wet rooms, with exhausted air preheating the incoming fresh air via a heat exchanger in the unit. 90% of the heat can be recovered through this process that would otherwise be wasted.</p> <p>MEV, or demand control ventilation, relies on continuous extract from wet rooms, without heat recovery. It incorporates automated wall vents which open/close dependent on internal humidity conditions.</p>

		MEV is more power efficient than the MVH. MVHR is more beneficial in energy terms when the outdoor air is cold.
PV Solar Panels	<p>PV Solar Panels have been considered as part of the planning application.</p> <p>The panels are typically placed on the South facing side of the building for maximum heat gain and in some instances, can also be used to assist the heating system.</p>	<p>PV Solar Panels offer the benefit of reducing fossil fuel consumption and carbon emissions to the environment.</p> <p>They also reduce the overall requirement to purchase electricity from the grid.</p>
ECAR Charging Points	<p>Parking spaces will be ducted for future installation of EV charging.</p> <p>As this site does not include on-curtilage parking, where the EV charging would be from the distribution board of individual dwellings, a central EV charging network will be established for the street parking.</p>	<p>Providing the option of E-car charging points will allow occupants to avail of the ever- improving efficient electric car technologies.</p>

3.2 MATERIALS

The practical implementation of the Design and Material principles has informed design of building facades, internal layouts and detailing of the proposed apartment buildings. The façade materials are identified on the architectural drawings within this planning application.

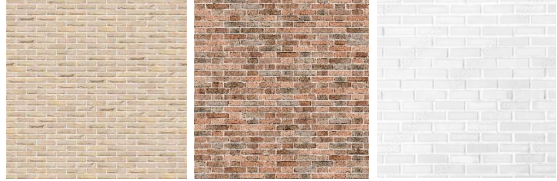
3.3 BUILDINGS

All dwellings are designed in accordance with the Building Regulations, in particular Part D 'Materials and Workmanship', which includes all elements of the construction. The Design Principles and Specification are applied to both the apartment units and the common parts of the building and specific measures taken include:

Measure Description	Benefit
Natural/Passive ventilation system to circulation areas	Avoids costly mechanical ventilation systems and associated maintenance and future replacement.
External paved and landscaped areas	All of these require low/minimal maintenance.
Daylighting to circulation areas where possible	Avoids the requirement for continuous artificial lighting.

3.4 MATERIAL SPECIFICATION

Measure Description	Benefit
<p>Consideration is given to the requirements of the Building Regulations and includes reference to BS 7543:2015, 'Guide to Durability of Buildings and Building elements, Products and Components', which provides guidance on the durability, design life and predicted service life of buildings and their parts.</p> <p>All common parts of the proposed Apartment buildings and, the durability and performance of these are designed and specified in accordance with Figure 4; Phases of the Life Cycle of BS7543; 2015. (Please see Appendix B for this figure). The common parts are designed to incorporate the guidance, best practice principles and mitigations of Annexes of BS 7543: 2015 including: Annex A Climatic Agents affecting Durability Annex B Guidance on materials</p>	Ensures that the long-term durability and maintenance of Materials is an integral part of the Design and Specification of the proposed development.

and durability Annex C Examples of UK material or component failures Annex D Design Life Data sheets	
Use of brickwork and stone to the majority of the envelope of buildings (and particularly where robustness and durability are required), with painted render in exceptional feature areas.	 <p>Requires minimal on-going maintenance</p>
Use of high-performance powder-coated windows, doors and railings.	Requires minimal on-going maintenance
Traditional roof coverings with robust and proven detailing to roof elements	Built up warm roof system with sedum layer over, reduced maintenance & are easy to repair.

3.5 EXTERNAL MATERIAL TYPICAL PERFORMANCE INDICATORS

The following tables typical performance indicators for a range of external materials as described on the planning drawings:

External Material Typical Performance Indicators	
Roof	
Description	Built up warm roof system
Typical Life Expectancy	20 years ++
Robustness & Security	High – generally not in vulnerable locations
Replacement & Repair	High- easily replaced in case of damage
Typical Maintenance	Very low maintenance
Entrance Canopy Windows & Doors	
Description	Powder-coated aluminium
Typical Life Expectancy	45-50 years
Robustness & Security	Good resistance to accidental damage
Replacement & Repair	Moderate- able to be touched up
Typical Maintenance	Low maintenance
Balconies & Railings	
Description	Powder-coated metal
Typical Life Expectancy	Metal structure typically 70 years

Robustness & Security	High resistance to accidental damage
Replacement & Repair	Moderate- able to be touched up
Typical Maintenance	Low maintenance
External Walls	
Description	Clay brick
Typical Life Expectancy	50-80 years. Pointing, 25-50 years
Robustness & Security	Very high resistance to accidental damage
Replacement & Repair	Excellent- easily replaced
Typical Maintenance	Very low maintenance
External Render	
Description	Render finish
Typical Life Expectancy	Circa 25 years
Robustness & Security	High resistance to accidental damage
Replacement & Repair	Good - able to be repaired locally
Typical Maintenance	Low maintenance
Rainwater Goods	
Description	Powder-coated metal
Typical Life Expectancy	40-50 years
Robustness & Security	Good resistance to accidental damage
Replacement & Repair	Excellent- easily replaced
Typical Maintenance	Low maintenance
External Steps	
Description	Concrete
Typical Life Expectancy	80 years
Robustness & Security	Very high resistance to accidental damage
Replacement & Repair	Good - able to be repaired locally
Typical Maintenance	Very low maintenance

3.6 LANDSCAPE

Measure	Description	Benefit
Hard Landscape Materials	<p>Sustainable, robust materials, with high slip resistance to be used for paving.</p> <p>Durable and robust finishes to be selected for all play elements, fencing, furniture, bin and bicycle storage units.</p>	Materials selected to minimise on-going maintenance inputs
Soft Landscape Materials	<p>Planting proposals have been formulated to complement the local setting as well as being fit for purpose in respect of private and public realm uses and spatial constraints imposed by garden sizes and the width of planting strips.</p> <p>Native tree species have been selected in significant numbers for planting along boundaries and across open spaces while non-native species have also been selected where spatial constraints are a factor. The plant selection proposed has a proven record to thrive in the Irish climate.</p>	Reduction in the frequency of required soft landscape maintenance
Site Layout and Design	<p>Pedestrian and cyclist friendly hierarchy of streets and open spaces are complemented by generous and high-quality landscape treatments including street tree planting and soft landscaping within public spaces providing long term high quality residential environments.</p>	Safe, high quality residential environments reduce vandalism and antisocial behaviour issues
Maintenance & Management	<p>Maintenance and management requirements have been considered through the design process. Complex planting arrangements have been omitted thus avoiding onerous maintenance and management requirements.</p>	Estate maintenance costs reduced
Sustainability & Biodiversity	<p>Sustainability aspects of the proposed development include the use of native trees where possible across the site. Other species have been carefully selected for compatibility with the size of available spaces which is an important factor in long term management. The overall objective is to enhance the</p>	Enhanced sustainability of long-term management

	<p>biodiversity potential of the site in addition to providing seasonal interest and variety.</p> <p>Judiciously placed flowering shrub and groundcover planting have been included to further promote biodiversity (pollinator species attracting insects and birdlife). Sedum is also included to roofs, for both SUDs benefit and biodiversity gains.</p>	
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3.7 WASTE MANAGEMENT

The following measures illustrate the intentions for the management of Waste.

Measure	Description	Benefit
Construction and Operational Waste Management Plan	A Construction and Operational Waste Management Plan will be developed by the developer in due course	Achieving best practice in the segregation of waste, recycling and reusing where possible, reducing material to landfill and promoting the circular economy.
Operational Waste Management Plan	This application includes by an Operational Waste Management Plan prepared by a specialist consultant.	The report demonstrates how the scheme has been designed to comply with local, regional, and national waste legislation.
Storage of Non-Recyclable and Recyclable Household Waste	<p>Inclusion of centralised waste storage areas.</p> <p>Domestic waste management strategy: Grey, Brown and Green bin distinction.</p> <p>Enough space to accommodate regular collection of bins.</p>	Easily accessible by all residents, minimizes potential littering of the scheme, reduce potential waste charges and not limit waste contractor selection

	Domestic waste management strategy: General waste, mixed recyclable and organic bin distinction.	Helps reduce potential waste charges and not limit waste contractor selection
	Security restricted waste storage rooms	Reduce potential for fly tipping by residents and non-residents
	Well signed waste storage rooms and bins	Help reduce potential cross contamination of waste and reduce waste charges.
Composting	Organic waste bins to be provided in waste storage areas	Reduces materials to landfill and waste charges

3.8 HEALTH & WELLBEING

The following are illustrations of how the health and wellbeing of future residents are considered.

Measure	Description	Benefit
Natural / Day Light	The design, separation distances and layout of the duplex / apartment blocks have been designed to optimize natural daylight/ sunlight and to provide good levels of natural light.	Reduces reliance on artificial lighting thereby reducing costs.
Accessibility	All units will comply with the requirements of Part M and Part K.	Reduces the level of adaptation, and associated costs, potentially necessitated by residents' future circumstances.
Security	The scheme is designed to incorporate passive surveillance with the following security strategies available for adaption into the design: <ul style="list-style-type: none"> • CCTV monitoring • Fobbed access into communal bin and shared bicycle facilities. 	Aids in reducing potential security/ management costs. Enhances safety for residents and visitors.

	<ul style="list-style-type: none"> • Controlled Access to individual circulation cores • Controlled access between Public Spaces and Residents Communal Spaces • Appropriately lit external spaces 	
Natural Amenity	External spaces being provided separately for residents (communal courtyard & private balconies) and public (Quality Public Open Space)	Facilitates community interaction, socialising, and play – resulting in improved wellbeing. Proximity and use of external green spaces promotes a healthy lifestyle.

3.9 MANAGEMENT

Consideration has been given to the ensuring the users have a clear understanding of their property.

Measure	Description	Benefit
Home User Guide	<p>Consideration will be given to providing all residents with a home user guide including:</p> <p>User information manual – this will provide important information for the purchaser on details of their new property. It typically includes details of the property such as MPRN and GPRN, Information in relation to connect with utilities and communication providers, contact details for all relevant suppliers and User Instructions for appliances and devices in the property.</p> <p>A Residents Pack prepared by the OMC which will typically provide information on contact details for the Managing agent, emergency contact information, transport links in the area and a clear set of rules and regulations.</p>	Residents are kept as informed as possible so that any issues can be addressed in a timely and efficient manner.

3.10 TRANSPORT

Consideration has been given to the ensuring the users have a clear understanding of their property.

Measure	Description	Benefit
Access to Public Transport	The Stanley Street site is immediately adjacent to bus stops on Manor Street, the Luas Red line, and other city centre infrastructure	The availability, proximity and ease of access to high quality public transport services contributes to reducing the reliance on the private motor vehicle for all journey types.
Permeable Connections	Dedicated pedestrian and cycle infrastructure on-site, and their connectivity with adjoining lands and off-site networks.	Permeable connections for residents
Bicycle Storage	The provision of high-quality secure bicycle parking facilities, for both short term and long-term parking requirements.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicles.
E - Car Facilities	EV charging facilities and ducting for future charging provided from a local landlord distribution board.	To accommodate the growing demand for electric vehicles which assist in decarbonising society and reducing fossil fuel dependency.

Appendix. A: Items included in a typical building investment fund

The table below illustrates what would be incorporated for the calculation of a Building Investment Fund Sinking Fund (Sinking Fund).

Building Investment Fund (Sinking Fund)	
Building Element	Minimum Service life (years) at Service Commencement Date
Structure/ sub structure	60
Floor Structure	60
Roof Structure	60
Roof covering – up to 5 degree pitch	40
Roof covering – over 5 degree pitch	40
Windows	40
External wall/ cladding inc. openings	40
External doors	40
Internal partitions inc. openings	40
Internal finishes	15
Ceilings	40
Internal doors	30
Internal fixtures and fittings	15
Sanitary fittings	20
Kitchen sanitary fittings	20
Built-in furniture	20
Mechanical plant	As CIBSE Guide, Vol. B
Electrical plant	As CIBSE Guide, Vol. B
Engineering services distribution systems	As CIBSE Guide, Vol. B
CCTV installations	20
Fire installations	20
Security installations	20
Communications installations	20
Lifts	15
Underground drainage	60
External finishes -decorative coatings	25
External fences	30